

**REMARKS**

In the present Amendment, Claims 1 and 9 have been amended to incorporate the subject matters of Claims 2 and 17, respectively. Accordingly, Claims 2 and 17 have been cancelled. Claims 3-8 have been amended to correct their dependency in view of the cancellation of Claim 2. Claims 18 and 19 have been cancelled without prejudice and disclaimer. No new matter has been added, and entry of the Amendment is respectfully requested.

Upon entry of the Amendment, Claims 1, 3-16 and 20 will be pending.

In paragraph No. 3 of the Action, Claims 1-10, 12-18 and 20 have been rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as allegedly being unpatentable over Ichikawa et al (US 2004/0014876).

Applicant submits that this rejection should be withdrawn because Ichikawa et al does not disclose or render obvious the present invention.

The Examiner contends that Ichikawa et al teach the use of a protease to deproteinize natural rubber and the protease use can be the same enzyme as preferred by Applicant. The Examiner acknowledges that Ichikawa is silent as to the decomposition of glucans. However, the Examiner takes the position that the glucans are inherently possessed by the natural rubber, when the natural rubber is treated with the enzyme then the glucans are decomposed. As such the natural rubber contains the decomposed glucans as claimed.

Applicant respectfully disagrees.

Ichikawa et al disclose a deproteinizing agent which can realize high deproteinization of a natural rubber latex and provide the latex with sufficient heat-sensitive coagulation properties while maintaining the stability of the deproteinized natural rubber latex for a long term ([0017]). The deproteinizing agent comprises a protease and one or more water-soluble polymers as an

active component (abstract, [0021] and [0043]). The protease may be used in combination with enzymes such as amylase and cellulase ([0045]).

With due respect, the Examiner's assertion that the protease use can be the same enzyme as preferred by Applicant is incorrect, since Ichikawa et al disclose that the protease may be used in combination with enzymes such as amylase and cellulase.

When the glucans contained in the latex are decomposed with  $\alpha$ -amylase, the rubber is excellent in low hysteresis loss property without reducing abrasion resistance and is low in compound Mooney viscosity. Therefore, the rubber is excellent in processability (as shown in Examples 1 and 2, lines 1-7 at page 20 of the specification).

When the glucans contained in the latex are decomposed with cellulase, the rubber is excellent in abrasion resistance without reducing low hysteresis loss property. Further, the rubber is low as well in compound Mooney viscosity and is excellent in processability (as shown in Examples 3 and 4, lines 7-11 at page 20 of the specification).

Accordingly,  $\alpha$ -amylase and cellulase exert an enzyme action on the glucans. In contrast, a protease exerts an enzyme action on the protein, and does not exert an enzyme action on the glucans.

Ichikawa et al teach that protease may be used in combination with enzymes such as amylase and cellulose to deproteinize natural rubber. However, the unexpectedly superior effects provided by the present invention cannot be attained in the combination of such enzymes. Protease exerts an enzyme action on the protein, and therefore,  $\alpha$ -amylase and cellulase themselves are decomposed and lose an enzyme action on the glucans. Therefore, Ichikawa et al do not teach or suggest the decomposition of glucans.

In view of the above, reconsideration and withdrawal of the rejection of Claims 1-10, 12-18 and 20 based on Ichikawa et al are respectfully requested.

In paragraph No. 5 of the Action, Claims 1-20 have been rejected under 35 U.S.C. § 102(b or e) as allegedly being anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as allegedly being unpatentable over Kawamura et al (US 6,344,499) or Galimberti et al (US 2003/0109625).

Kawamura et al disclose decomposing protein in natural rubber latex by using protease (col. 4, lines 5-6) and the protease may be combined with other enzymes such as amylase and cellulose (col. 4, lines 20-22). Kawamura et al do not teach or suggest the decomposition of glucans.

Applicant submits that the rejection based on Kawamura et al should be withdrawn for essentially the same reasons that the rejection based on Ichikawa et al should be withdrawn as discussed above.

Galimberti et al disclose the use of hydrophilic polymers in elastomeric compositions. The hydrophilic polymers are destructured starch which comprises amylase and amylopectine. The hydrophilic polymers have a glass transition temperature ranging from 150 °C to 0 °C. See, paragraph [0009] of Galimberti et al.

The hydrophilic polymers or the destructured starch are mixed in the natural rubber compositions in Galimberti et al. In contrast, the decomposed materials processed by  $\alpha$ -amylase and cellulase are removed from the natural rubber latex in the present invention.

Applicant discloses that “in the present invention, components exerting an adverse effect in non-rubber components are removed by decomposing glucans comprising prescribed sugar and fibers such as prescribed cellulose contained in non-rubber components in natural rubber

latex to make it possible to improve a low hysteresis loss property and an abrasion resistance of natural rubber and a rubber composition using it and sufficiently maintain revelation of strain induced crystallization, an accelerating effect, an antioxidant effect and a vulcanization-accelerating effect." See, the last paragraph at page 7 of the specification and Examples (results shown in Table 2 at page 20 of the specification).

In view of the above, reconsideration and withdrawal of the rejection based on Galimberti et al are respectfully requested.

Allowance is respectfully requested. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

*Hui Chen Wauters*

Hui C. Wauters  
Registration No. 57,426

SUGHRUE MION, PLLC  
Telephone: (202) 293-7060  
Facsimile: (202) 293-7860

WASHINGTON OFFICE

**23373**

CUSTOMER NUMBER

Date: December 27, 2007